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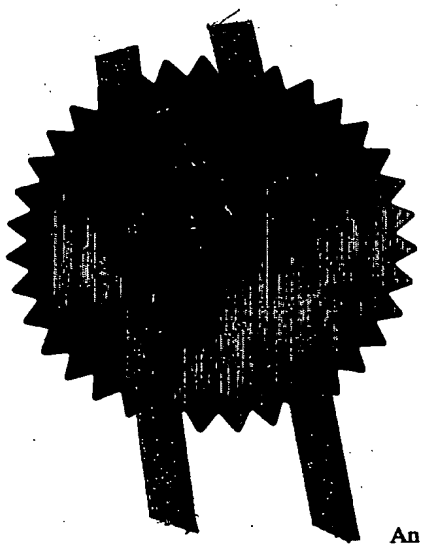

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2.	Patent application number *(The Patent Office will fill in this part)*	0401057.5	
3.	Full name, address and postcode of the or of each applicant *(underline all surnames)*	Network Limited Stowe Lodge Calcutt Meadow Southam. CV47 1ND United Kingdom	
	Patents ADP number *(if you know it)*	8789786001	
	If the applicant is a corporate body, give the country/state of its incorporation	UK	
4.	Title of the invention	Provision of User Specific Information for a Computer User	
5.	Name of your agent *(if you have one)*	**Marks & Clerk**	
	"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*	**144 New Walk** **Leicester** **LE1 7JA**	
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6.	If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or each of these earlier applications and *(if you know it)* the or each application number	Country	Priority application number *(if you know it)* / Date of filing *(day / month / year)*
7.	If this application is divided or otherwise derived from an earlier UK application, give the number and filing date of the earlier application	Number of earlier application	Date of filing *(day / month / year)*
8.	Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'yes' if:* *a) any applicant named in part 3 is not an inventor, or* *b) there is an inventor who is not named as an applicant, or* *c) any named applicant is a corporate body.*	Yes	

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Description	9
Claim(s)	2
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Priority documents	
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Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	T
Request for preliminary examination and search *(Patents Form 9/77)*	One
Request for substantive examination *(Patents Form 10/77)*	
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11. I/We request the grant of a patent on the basis of this application.

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Date
16 January 2004

12. Name and daytime telephone number of person to contact in the United Kingdom

HALLAM, Arnold Vincent
(0116) 233 8181

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DUPLICATE

Provision of User Specific Information for a Computer User.

The present invention relates to a method of providing access to user specific information for a computer user.

The potential of the internet to provide access to large quantities of useful information is well known. The increasing growth of the internet, however, means individual users searching for information of particular interest often have to trawl through several poor quality or irrelevant websites before they locate the best sources of information. Search engines designed to assist locate relevant information often produce hundreds of results, only a few of which are of particular interest to the user.

Several classification websites exist which classify information sources into topic areas and provide access via a hierarchical menu system. However, due to the large quantity of information available there are often hundreds of topics and sub topics of no interest to the user but which make it more difficult to find desired information. Additionally, a user searching through the menu system of a classification website will often have to go back and forth several times between the menu system and the website being visited. This can be particularly inconvenient when the new site is loaded over the top of the classification website either in a new or an existing browser window.

Often internet users are unaware of websites, information or resources that are available through the internet that would be useful or interesting to them. The internet is constantly evolving and users find it difficult to keep on top of the array of new information.

The present invention seeks to provide a method of providing access to user specific information for a computer user, which overcomes or at least mitigates these problems.

According to the invention there is provided a method of providing access to user specific information for a computer user, the method comprising: providing a dedicated user interface for internet usage by a computer user; monitoring the internet usage of the computer user through the dedicated user interface; identifying user specific information relevant to the

internet usage of the computer user; modifying the dedicated user interface dependent on the internet usage of the user, to provide access to the identified user specific information.

Preferably details of historical internet usage by several computer users are stored in usage histories, including details relating to the information sources accessed by the computer users; the usage histories are analysed to determine the most commonly accessed sources of information; each of the most commonly accessed sources of information, for all users, is allocated to at least one topic; and the usage history of each computer user is analysed to identify which computer users have expressed an interest in the or each topic; wherein, the identified user specific information includes information relating to any topic in which the computer user has expressed an interest.

Preferably the usage histories are analysed to determine the most commonly accessed topics and related resources are associated with the most commonly accessed topics; wherein, the identified user specific information further includes the related resources associated with any topic in which the computer user has expressed an interest.

Access to at least some of the identified user specific information may be provided via a hierarchical menu. A computer user may also be any internet or intranet user.

The invention will now be described by way of example only with reference to the attached drawings in which:

Figure 1 is a diagram of an internet management system;

Figure 2 is a representation of a user interface of a dynamic browser;

Figure 3 is a flow chart illustrating a method for providing user specific information, directly to the computer of the user;

Figure 4 is a flow chart illustrating the loading of a dynamic browser to replace a conventional internet browser;

Figure 5 is a flow chart illustrating the load up sequence of the dynamic browser;

Figure 6 is a flow chart illustrating the operation of a profiling engine;

Figure 7 is a flow chart illustrating the operation of a resource gathering system.

In figure 1 an internet management system is shown generally at 10. The management system 10 comprises a dynamic browser 12, a profiling engine 14, a resource gathering system 16, a user profiles database 18, a user data database 20, and a resources database 22. The databases are pictured separately in figure 1 to make the system easier to understand but may only comprise of one database.

In figure 2 a user interface of the dynamic browser 12 is designated generally 30. The user interface 30 comprises the conventional features of a standard internet browser, such as navigation buttons, a view pane 32 and means for entering a URL. The dynamic browser 12 also includes a menu pane 34, for accessing a user specific dynamic menu, which includes a number of dynamic menu topics 36. The dynamic menu topics 36 typically define user dependent categories, which are of particular interest to the user, for example, news, politics or sport. Additionally the user interface 30 may also include means for completing an internet search using a conventional search engine or provide access to a web service such as holiday search or route planner.

In operation, when a user selects a dynamic menu topic 36 by moving a cursor over it, an initial sub-menu 38 is provided. Each initial sub-menu 38 lists a number of principal sub-topics 40 or websites, which fall into the categories defined by the selected dynamic menu topic 36. Each initial sub-menu 38 may also be provided with means for completing searches relating to the category defined by the selected dynamic menu topic 36.

Moving the cursor over a website listed in the initial sub-menu 38 brings up a summary 42 of the website to which it refers. Selection of the website, for example by clicking a mouse button, loads the website into the view pane 32.

Selecting a principal sub-topic 40 listed in the initial sub-menu 38, by moving a cursor over

it, brings up a secondary sub-menu 44 with a corresponding list of websites and/or lower level sub-topics 46 relating to the selected principal sub-topic 40. The websites listed in the secondary sub-menu 44 may be loaded into the view pane 32, summaries of the websites viewed, and/or additional sub-menus accessed, as described for the initial sub-menu 38. Hence, the sub-topics and websites form a conventional menu hierarchy. It will be appreciated that the hierarchy may include any suitable number of levels.

The menu pane 34 can also include dynamic short cuts to regularly accessed information such as internet mail web sites. The information contained within the menus is not restricted to websites and may contain any information such as news, weather or timetables.

In figure 3 a flow diagram illustrating a method for providing user specific information, directly to the computer of the user is designated generally at 50. The method begins when the user obtains access to the internet, and logs on to an internet management website using a conventional internet browser as shown at 52 in figure 4. The internet browser 52 may be any suitable browser for example Internet Explorer (RTM) or Netscape (RTM).

As seen in figures 3 and 4 once the internet management website is accessed, management software runs from the internet management website to load the dynamic browser 12 to replace the conventional internet browser 52 of the user. The management software may be implemented in any suitable form, for example, by using a Java applet or Macromedia Flash.

The user operates the dynamic browser 12, in place of the conventional internet browser 52, to request information from the internet. The user may, for example, load websites by typing in their URL directly, carry out internet searches using conventional search engines, or select information/websites using the user specific menu system.

Usage data relating to the information requested by the user is then sent to the profiling engine14 for analysis and addition to a user profile. Typically, for example, the usage data will include a copy of any URL entered or selected and/or any search term used or any other menu information, e.g. its category, or its position within the sub menus (schematic data).

Any website or other information requested loads directly into the view pane 32 of the dynamic browser 33 that can be opened automatically if the user chooses. The information requested may, for example, be a news article, an online catalogue page, information relating to a team club or society or any other information available on the internet.

The profiling engine 14 interprets the usage data and, associates it with a topic or group of topics using the resource gathering system 16. The resource gathering system identifies any additional relevant related information which may be of interest to the user and modifies the dynamic browser 12, and in particular the dynamic menu and dynamic shortcuts to provide easy access to the identified information. If no relevant information is identified or the dynamic menu already contains links to the identified information then the browser is not updated. Any such update is automatic and does not require the user to refresh the dynamic browser 12. Conventional browsers cannot be refreshed or updated. They are fixed, and only the content within them e.g. HTML pages can be refreshed. The dynamic browser allows itself to be altered, automatically.

The internet management system 10 then continues to monitor the user's activity, respond to requests for information, and make appropriate modifications to the user interface 30 of the dynamic browser 12 until the user ends the internet session.

The loading sequence for the dynamic browser is now described in more detail with reference to figure 5 in which a flow diagram illustrating the sequence is designated generally at 54.

When loading of the dynamic browser 12 is initiated the management software begins by opening a first browser window with all the conventional tool bars turned off. The first browser window is then resized to fit into a first section of the screen of the computer, which the user is using to access the internet. A second browser window is then opened, with the conventional toolbars switched off, and resized to fit into a second section of the screen of the user. The combination of the two browser windows forms an empty browser with the first browser window corresponding to an empty menu pane and the second browser window corresponding to an empty view pane.

The dynamic browser could alternatively open in the existing window and simply replace the conventional toolbars with the internet management system rather than requiring two windows. The dynamic browser could be loaded as a floating menu/browser that can sit any where on the screen and does not necessarily require a resized browser pane.

The dynamic browser could also open in a new window with all conventional toolbars switched off. A frame within the page or an IFrame could be used to create the browser in browser effect. This would allow the menu system to open up over the IFrame creating the impression of a conventional browser.

It will be appreciated, however, that any suitable number of windows of any suitable size or configuration could be used. It will be further appreciated that those skilled in the art could achieve a similar effect by opening a single browser window of suitable size and dividing it into sections using frames, tables and/or any other suitable means.

A downloadable application will also be provided for users, this will allow greater functionality and smoother operation than the web-based system. It is anticipated that users who become acquainted with the web-based system will want to enhance the systems operation by downloading the internet management system application.

If the user is a new user the internet management system 10 creates a new user account, determines and logs the IP address of the user, and places a conventional cookie on the computer of the user. The new user account is provided with an associated user profile in the user profile database 18. The internet management system 10 then configures the empty browser to form the dynamic browser 12 by including access to information most commonly required by users as determined by the resource gathering system 16. A generic dynamic menu is added to the empty menu pane and a generic website is loaded into the empty view pane. Alternatively the website loaded into the view pane may be a site designated as a homepage by the user, using conventional means. The user might also be offered the option of logging in securely using a user name and password.

If the user is an existing user the internet management system 10 locates the user profile and

any user specific settings and preferences associated with the existing user via the profiling engine 14. The empty browser is then configured to form the dynamic browser 12 by including access to information specific to the user. The user specific dynamic menu is added to the empty menu pane and a website loaded into the empty view pane dependent on user preferences.

The dynamic browser 12 is then sent to the computer of the user via the internet using suitable means, for example a TCP/IP open live connection.

In figure 6 a flow diagram illustrating the operation of the profiling engine is shown generally at 60. In operation the profiling engine 14 receives information relating to the internet usage of any number of users from their corresponding dynamic browsers. The profiling engine 14 analyses the usage information received and associates each item of information with the specific user to which it relates.

The information associated with each user is added to a user specific usage history. Each usage history is used to re-generate the user profile, for the corresponding user, to take into account any new interests.

The usage histories for all users are regularly analysed to determine the most commonly accessed sources of information. The most commonly accessed information sources are compiled into a list. Human operators regularly review the list and allocate each information source in the list to at least one topic, beginning with the most commonly accessed sites.

Once an operator has allocated an information source to a particular topic, a rule is created which links the particular topic to individual users in dependence on a set of operator specified usage data or known topics of interest.

For example, the preferences could be configured such that if information sources within a topic area are visited, by a particular user, more than a specified number of times within a specified period, and the topic is not an identified interest, then the topic is classed as a new interest. Alternatively, or additionally the preferences could be configured such that if the

user accesses information from a source allocated to a topic, which is not identified as an interest, a new corresponding menu link could be added to the dynamic menu. If the new menu link is subsequently used then the topic is confirmed as being an interest.

Similarly the preferences could be configured such that if a topic for which a menu link exists is not accessed for a specified period of time then the topic is classed as being of no interest the menu link removed from the dynamic menu.

When a new interest area is identified for a particular user, the profiling engine 14 uses the resource gathering system 16 to identify relevant information sources related to the new interest area. The information identified is then sent to modify the user interface of the dynamic browser of the user to provide access to the newly identified information. A new dynamic menu topic is provided for the interest area, the dynamic menu topic being populated with a hierarchy of relevant sub-topics, links to the newly identified information sources, website summaries and the like. If no new interest area is identified then no modification is made to the dynamic browser.

The Profiling Engine described in Figure 6 incorporates data mining to conduct some of the profiling. This data mining will identify statistical similarities between users which can then be used by operators to create more rules linking historical usage to identified topics. If a user has looked at a large number of subcategories of a general heading such as cars, the profiling engine will identify cars as an interest area. It might then create a rating hierarchy for the sub categories that the user was looking at. This information again provides operators with more criteria to create rules with. This data will also be used by the resource gathering system.

In figure 7 a flow diagram illustrating the operation of the resource gathering system 16 is shown generally at 70. Initially, the resource gathering system 16 receives topics or interest areas from the profiling engine 14 via the user data database 20 or the user profile database 22. Related resources are then identified for the topics or interest areas using at least one resource gathering process.

A first resource gathering process includes ascertaining the most commonly accessed topics or interest areas and compiling them in a list. Human operators regularly review each topic or interest area in the list starting with the most commonly accessed. For each topic or interest area the human operators determine the most relevant related information sources by carrying out searches based on the topic or interest area and assessing the relevance any information sources found during the searches. The most relevant related information sources are then identified as related resources for the topic or interest area being reviewed.

A second resource gathering process includes, for each topic or interest area, analysing the usage histories of users for which corresponding interest areas have been identified. In this manner common usage patterns are identified for each topic or interest area. The usage patterns contain details of information sources, which are most commonly accessed by users with a particular interest. The information sources referred to in the common usage patterns are then identified as related resources for the corresponding topic or interest area.

A third resource gathering process includes obtaining details of information sources previously allocated to each topic or interest area by the profiling engine 14, and identifying those information sources as being corresponding related resources.

Once identified, the related resources are prioritised, with the most relevant and highest quality resources being given the highest priority. The related resources are linked with the corresponding topic or interest area. Details of the related resources for each topic or interest area are then stored in the resources database 22. Data relating to high priority related resources, for each topic or interest area are sent to update the dynamic browser of any user accessing that topic or interest area.

The internet management system 10 including the profiling engine 14 and the resource gathering system 16 operate substantially continuously. Hence, in operation, when a user accesses a particular topic or interest area via the dynamic menu of a corresponding dynamic browser, access is provided to the most up-to date related resources. If a new interest is identified for a user then the dynamic menu of the corresponding dynamic browser is automatically updated to include access to related resources for that interest.

Claims

1. A method of providing access to user specific information for a computer user, the method comprising:

providing a dedicated user interface for internet usage by a computer user;

monitoring the internet usage by the computer user through the dedicated user interface;

identifying user specific information relevant to the internet usage by the computer user;

modifying the dedicated user interface dependent on the internet usage by the user, to provide access to the identified user specific information.

2. A method as claimed in claim 1 in which details of historical internet usage by several computer users are stored in usage histories, including details relating to the information sources accessed by the computer users;

the usage histories are analysed to determine the most commonly accessed sources of information;

each of the most commonly accessed sources of information, for all users, is allocated to at least one topic; and

the usage history of each computer user is analysed to identify which computer users have expressed an interest in the or each topic;

wherein,

the identified user specific information includes information relating to any topic in which the computer user has expressed an interest.

3. A method as claimed in claim 2 in which the usage histories are analysed to determine the most commonly accessed topics and related resources are associated with the most commonly accessed topics;

wherein,

the identified user specific information further includes the related resources associated with any topic in which the computer user has expressed an interest.

4. A method as claimed in any preceding claims in which access to at least some of the identified user specific information is provided via a hierarchical menu.

Fig 1

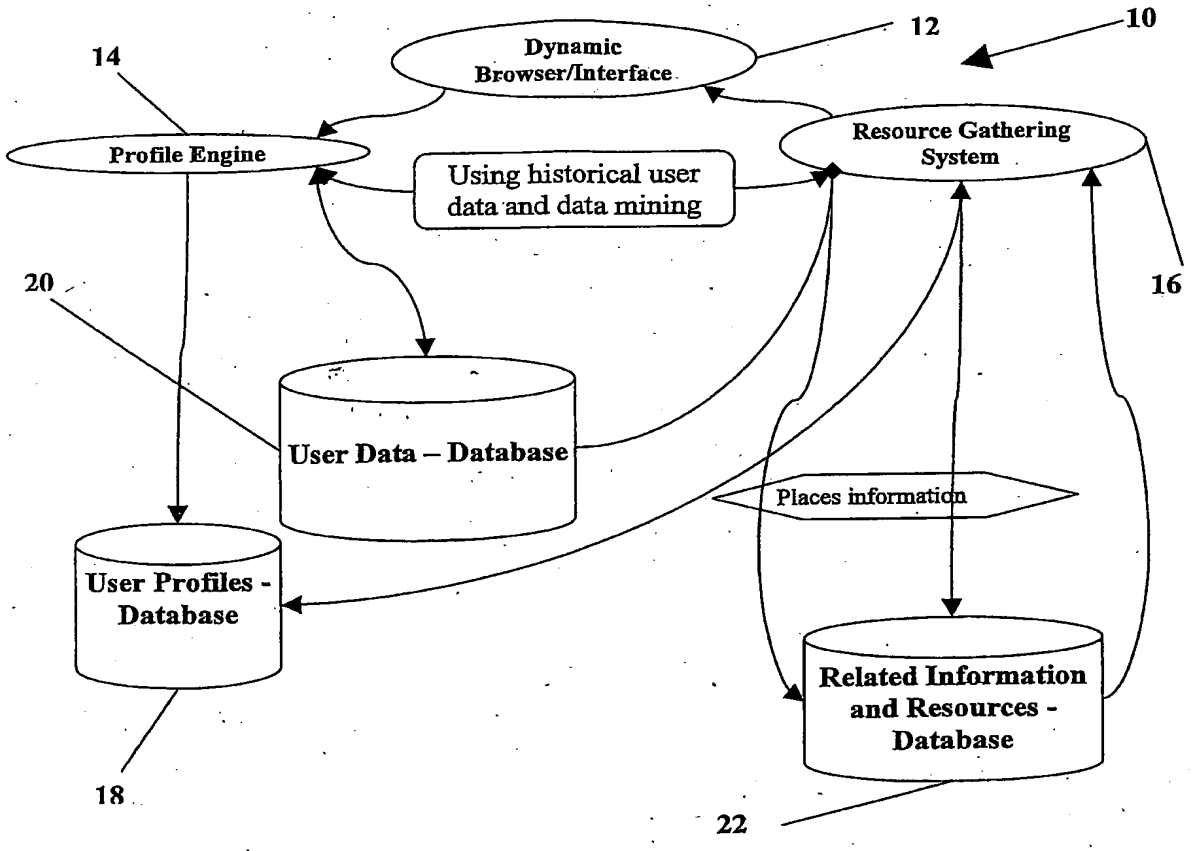

Dynamic Browser/Interface
12
10
14
Profile Engine
Resource Gathering System
Using historical user data and data mining
20
16
User Data – Database
Places information
User Profiles - Database
Related Information and Resources - Database
18
22

Fig 2

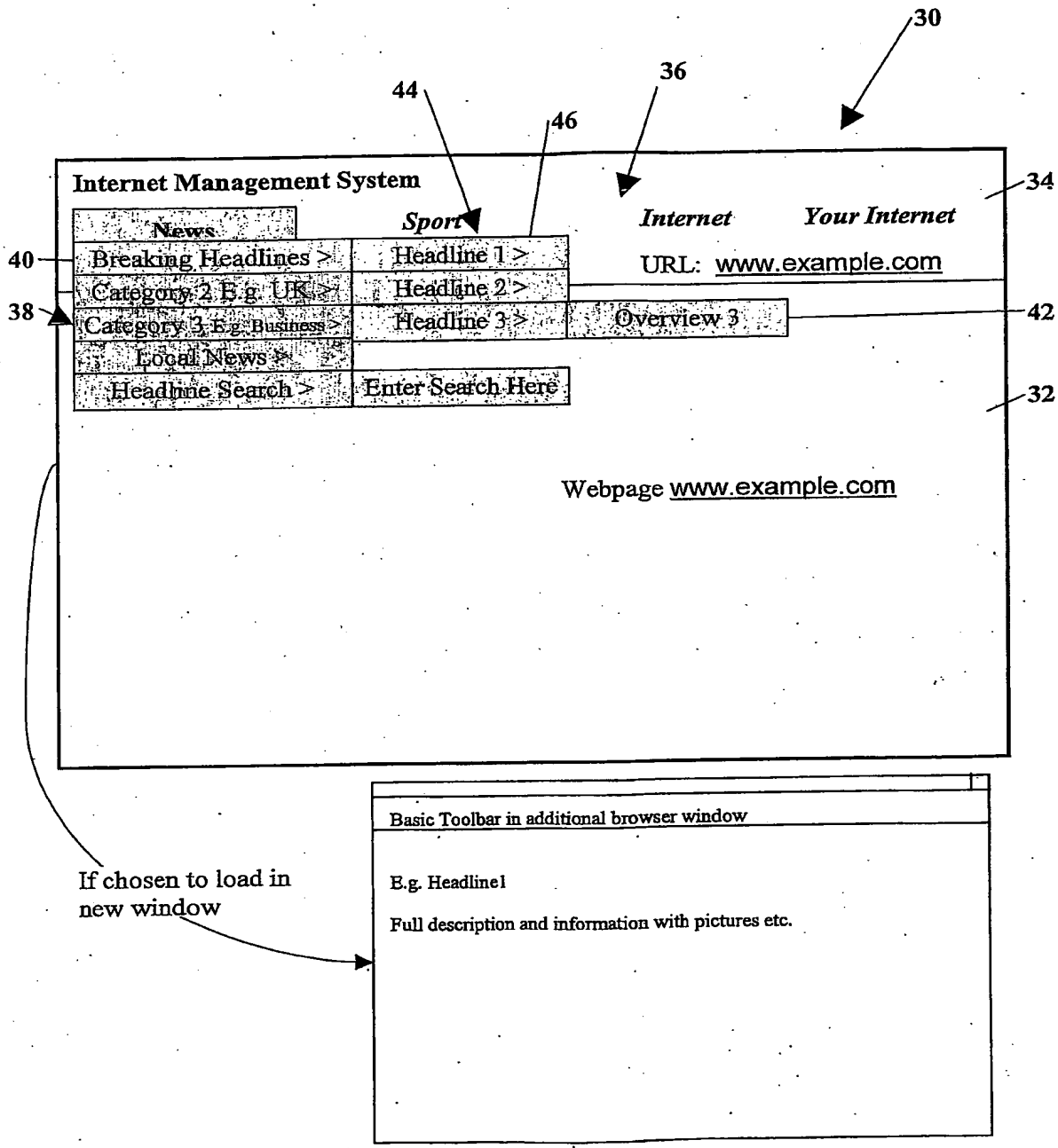

30
44
36
46
Internet Management System
34
News
Sport
Internet
Your Internet
40
Breaking Headlines >
Headline 1 >
URL: www.example.com
Category 2 E.g. UK >
Headline 2 >
38
Category 3 E.g. Business >
Headline 3 >
Overview 3
42
Local News >
Headline Search >
Enter Search Here
32
Webpage www.example.com
If chosen to load in new window
Basic Toolbar in additional browser window
E.g. Headline1
Full description and information with pictures etc.

Fig 3

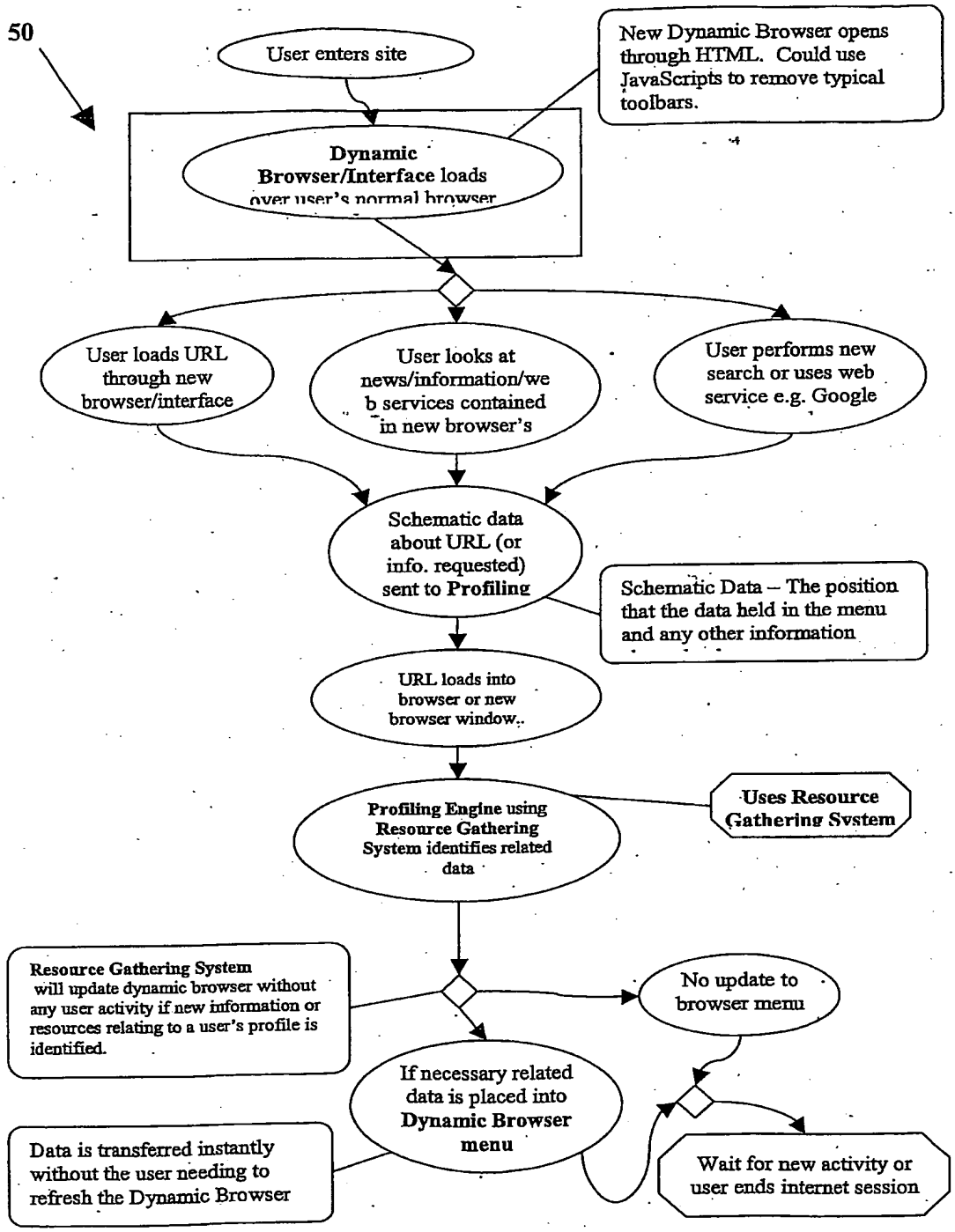

50
User enters site
New Dynamic Browser opens through HTML. Could use JavaScripts to remove typical toolbars.
Dynamic Browser/Interface loads over user's normal browser
User loads URL through new browser/interface
User looks at news/information/web services contained in new browser's
User performs new search or uses web service e.g. Google
Schematic data about URL (or info. requested) sent to Profiling
Schematic Data – The position that the data held in the menu and any other information
URL loads into browser or new browser window.
Profiling Engine using Resource Gathering System identifies related data
Uses Resource Gathering System
Resource Gathering System will update dynamic browser without any user activity if new information or resources relating to a user's profile is identified.
No update to browser menu
If necessary related data is placed into Dynamic Browser menu
Data is transferred instantly without the user needing to refresh the Dynamic Browser
Wait for new activity or user ends internet session

Fig 4

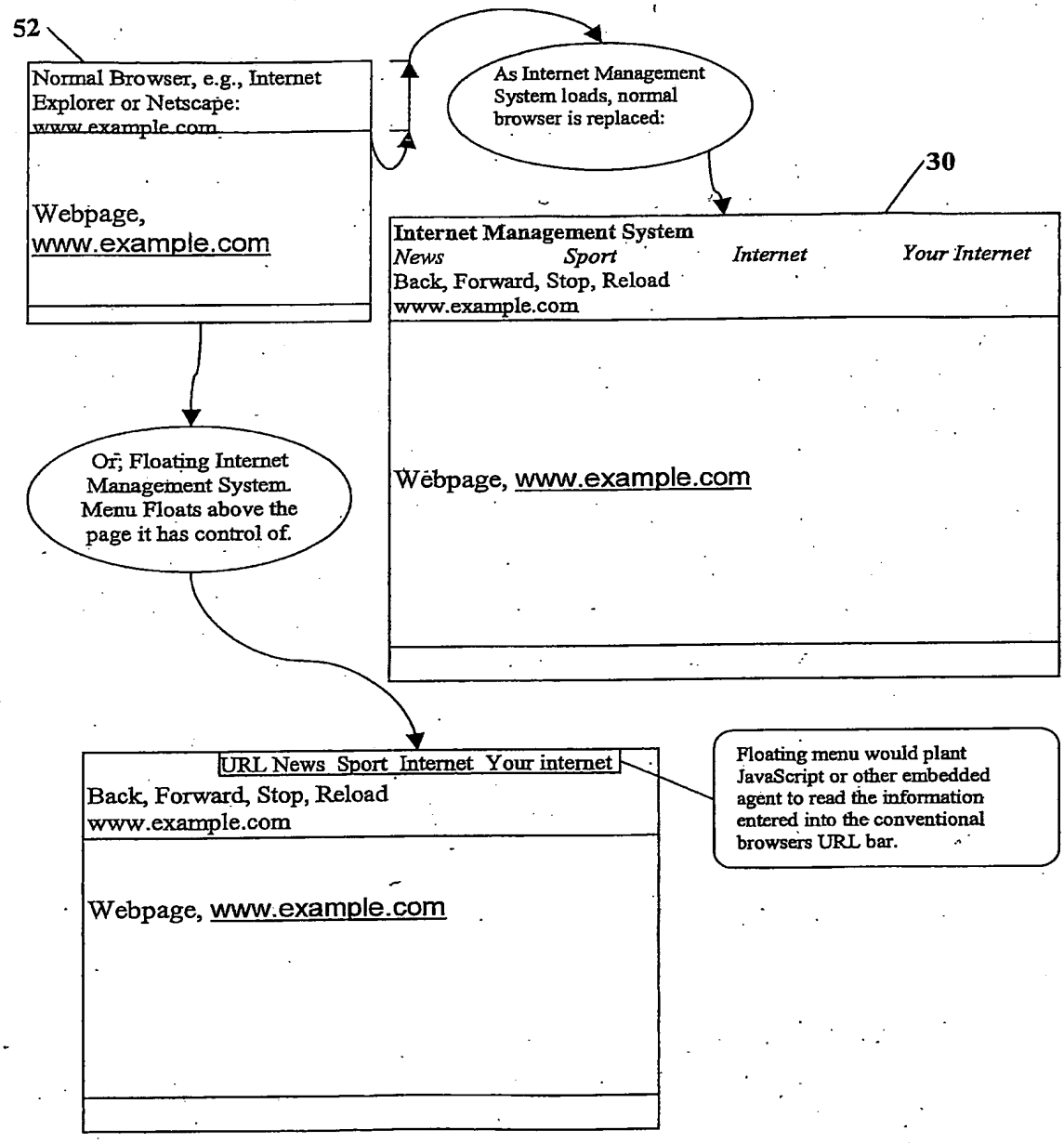

52
Normal Browser, e.g., Internet Explorer or Netscape:
www.example.com
Webpage, www.example.com
As Internet Management System loads, normal browser is replaced:
30
Internet Management System
News Sport Internet Your Internet
Back, Forward, Stop, Reload
www.example.com
Webpage, www.example.com
Or; Floating Internet Management System. Menu Floats above the page it has control of.
URL News Sport Internet Your internet
Back, Forward, Stop, Reload
www.example.com
Webpage, www.example.com
Floating menu would plant JavaScript or other embedded agent to read the information entered into the conventional browsers URL bar.

Fig 5

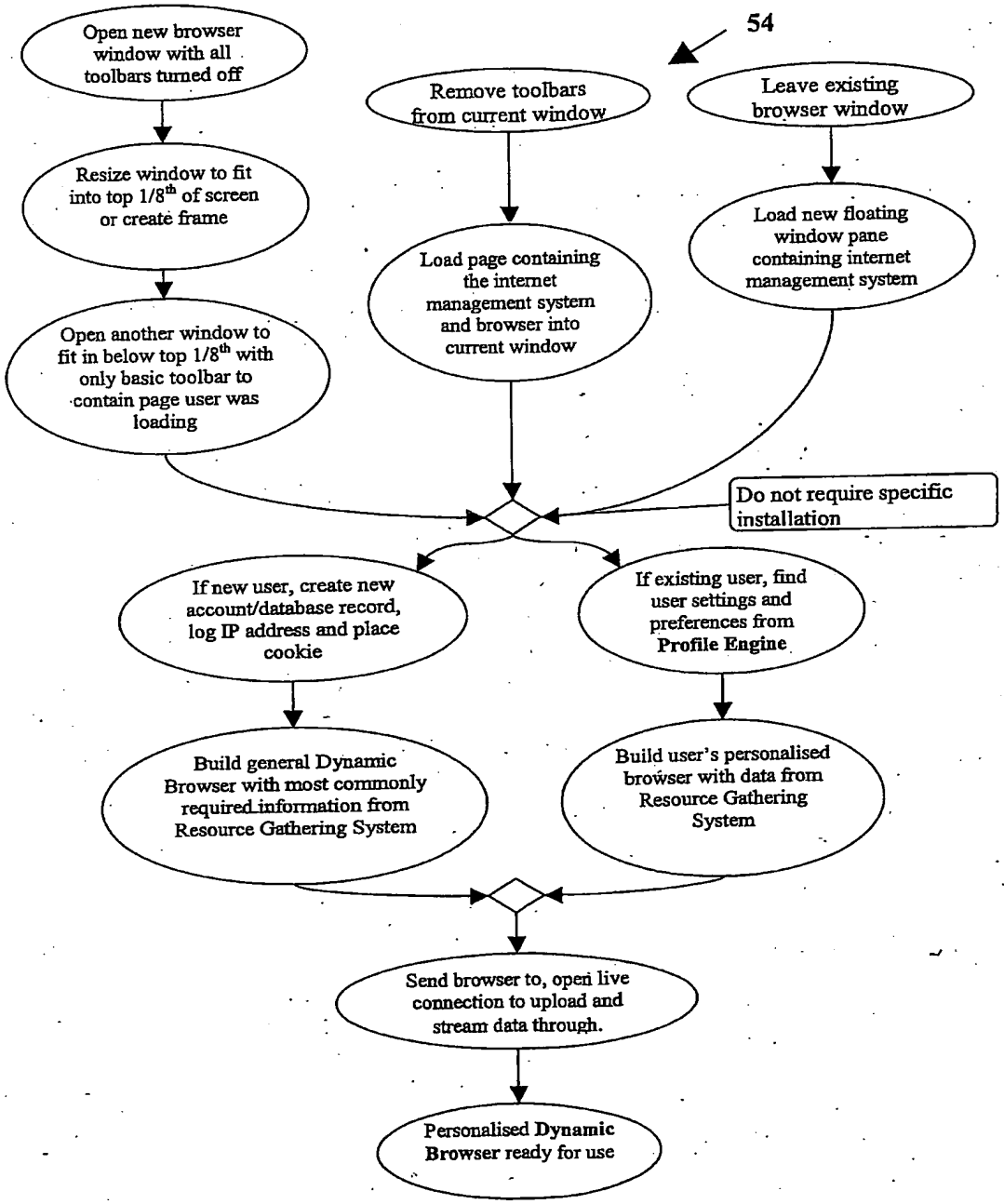

54
Open new browser window with all toolbars turned off
Remove toolbars from current window
Leave existing browser window
Resize window to fit into top 1/8th of screen or create frame
Load page containing the internet management system and browser into current window
Load new floating window pane containing internet management system
Open another window to fit in below top 1/8th with only basic toolbar to contain page user was loading
Do not require specific installation
If new user, create new account/database record, log IP address and place cookie
If existing user, find user settings and preferences from Profile Engine
Build general Dynamic Browser with most commonly required information from Resource Gathering System
Build user's personalised browser with data from Resource Gathering System
Send browser to, open live connection to upload and stream data through.
Personalised Dynamic Browser ready for use

Fig 6

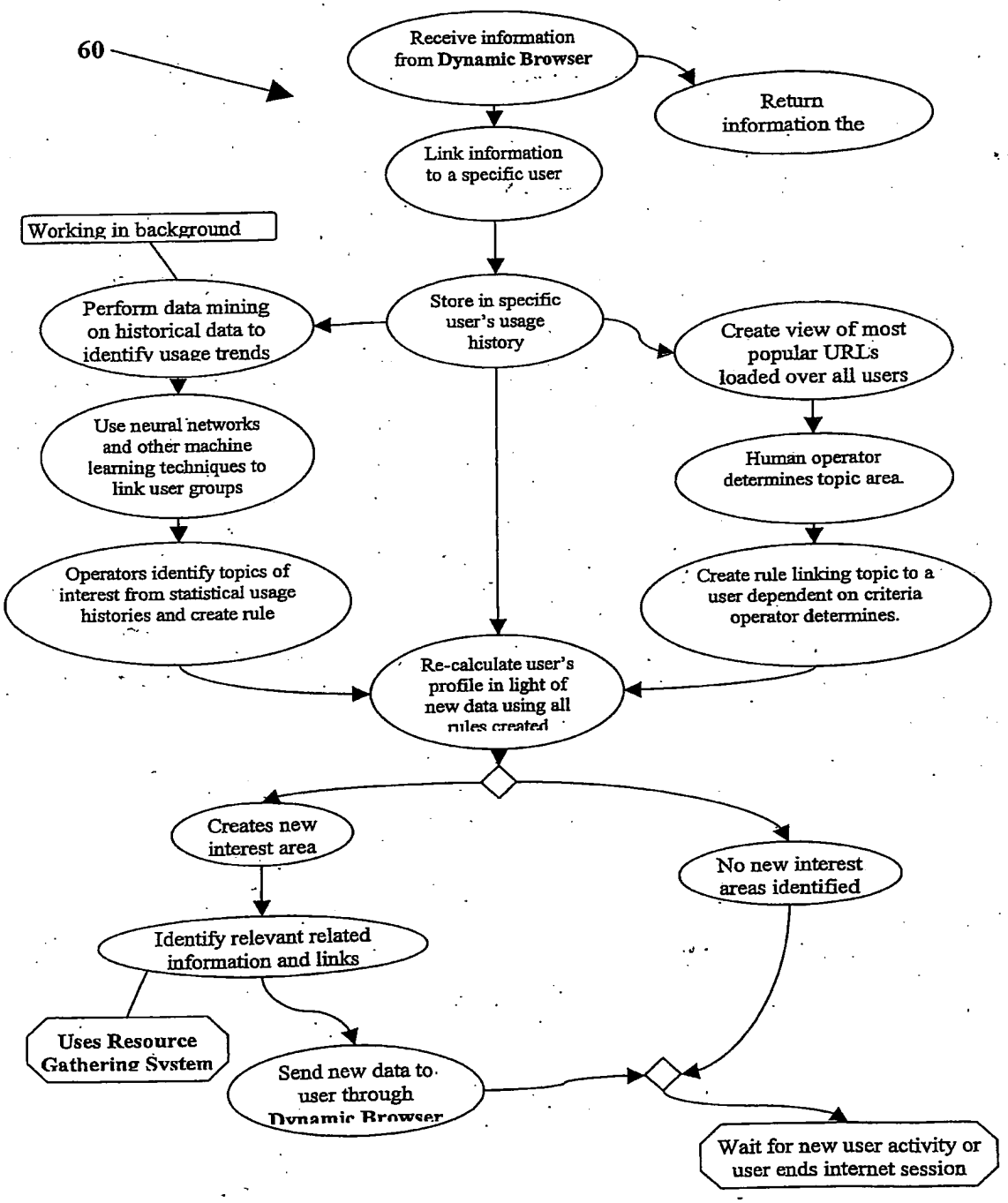
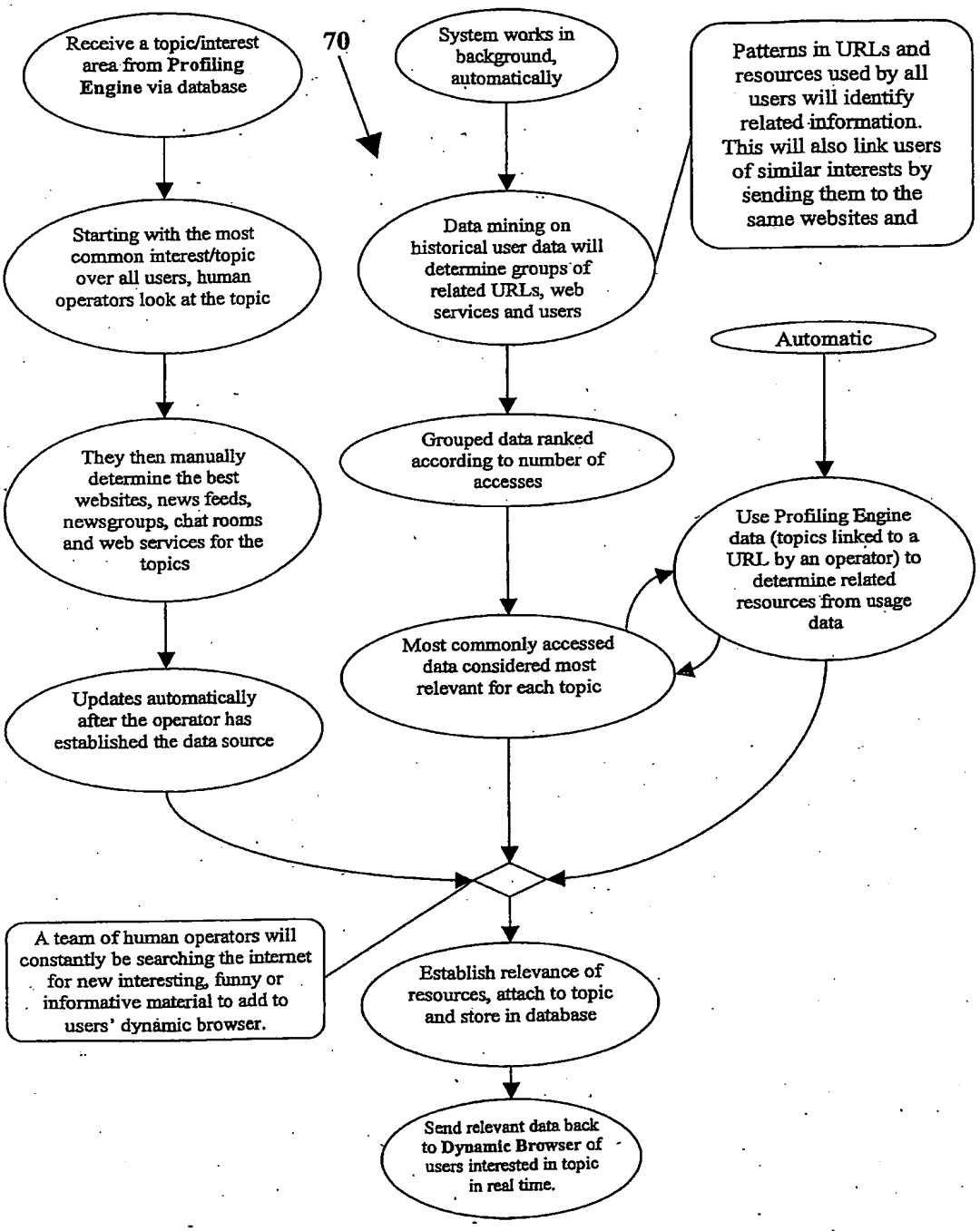

60
Receive information from Dynamic Browser
Return information the
Link information to a specific user
Working in background
Perform data mining on historical data to identify usage trends
Store in specific user's usage history
Create view of most popular URLs loaded over all users
Use neural networks and other machine learning techniques to link user groups
Human operator determines topic area.
Operators identify topics of interest from statistical usage histories and create rule
Create rule linking topic to a user dependent on criteria operator determines.
Re-calculate user's profile in light of new data using all rules created
Creates new interest area
No new interest areas identified
Identify relevant related information and links
Uses Resource Gathering System
Send new data to user through Dynamic Browser
Wait for new user activity or user ends internet session

Fig 7


70
Receive a topic/interest area from Profiling Engine via database
System works in background, automatically
Patterns in URLs and resources used by all users will identify related information. This will also link users of similar interests by sending them to the same websites and
Starting with the most common interest/topic over all users, human operators look at the topic
Data mining on historical user data will determine groups of related URLs, web services and users
Automatic
They then manually determine the best websites, news feeds, newsgroups, chat rooms and web services for the topics
Grouped data ranked according to number of accesses
Use Profiling Engine data (topics linked to a URL by an operator) to determine related resources from usage data
Most commonly accessed data considered most relevant for each topic
Updates automatically after the operator has established the data source
A team of human operators will constantly be searching the internet for new interesting, funny or informative material to add to users' dynamic browser.
Establish relevance of resources, attach to topic and store in database
Send relevant data back to Dynamic Browser of users interested in topic in real time.